





Computer Science (COMP) 656

Cloud Computing (Revision 1)

Status: Replaced with new revision, see the [course listing](#)  for the current revision 

Delivery mode: [Grouped study](#) 

Credits: 3

Area of study: Information Systems

Prerequisites: This course requires knowledge of computer networking and distributed computing, and familiarity with web services, service-oriented architecture, Web 2.0, and virtualization as well as research methodology. An interest in research and good technical writing and presentation skills would also be assets for anyone taking this course. Students who are concerned about not meeting the prerequisite for this course are encouraged to contact the course coordinator before registering.

Precluded: None

Faculty: [Faculty of Science and Technology](#) 

Notes:

This is a graduate level course and students need to apply and be approved to one of the graduate programs or as a non-program **School of Computing and Information Systems** [↗](#) graduate student in order to take this course. Minimum admission requirements must be met. Undergraduate students who do not meet admission requirements will not normally be permitted to take this course.

Instructor:**Dr. Qing (Ching) Ta**

Overview

Cloud Computing is considered one of the top five emerging technologies that will have a major impact on the quality of science and society over next 20 years. It provides a way to centralize the setup, implementation, maintenance, and management of integrated computation services to individual and corporate end users.

This course provides a graduate-level comprehensive introduction to cloud computing with an emphasis on advanced topics. It is designed in a workshop format with three workshops focusing on key topics. Each workshop includes a call for papers corresponding to the main theme of the workshop, a keynote presentation to provide a conceptual background on the topic, and your paper submission and online presentation. You will develop a final paper on cloud computing to submit to a related international conference as one of the outcomes of this course. The first workshop focuses on cloud computing concepts, technological foundations, infrastructure, and architecture. The second workshop targets security and technology challenges. The third workshop concentrates on applications, implementation issues, and management and governance. The goal of the final paper is to present a new idea or innovation using cloud computing.

Outline

Part I Understanding Cloud Computing

1. Keynote PowerPoint Presentation: Introduction to the main concepts, issues, and direction for this part of the study.
2. Workshop 1 Call for Papers: An outline of the Part 1 topics; paper submission and online presentation dates.
3. Group Research: You will research and write a short paper (4-5 pages) on a selected topic and submit the paper for peer review.
4. Online Workshop 1: You will present this part of your research paper.

Part II Core Issues of Cloud Computing

1. Keynote PowerPoint Presentation: Introduction to core issues and challenges in cloud computing, and direction for this part of the study.
2. Workshop 2 Call for Papers: An outline of the Part 2 topics; paper submission and online presentation dates.
3. Group Research: Research and write a short paper (4-5 pages) on the on a selected topic and submit the paper for peer review.
4. Online Workshop 2: You will present this part of your research paper.

Part III Cloud Computing Now and Future

1. Keynote PowerPoint Presentation: Introduction to cloud computing applications, and issues, and direction for this part of the study.
2. Workshop 3 Call for Papers: An outline of the Part 3 topics; paper submission and online presentation dates.
3. Group Research: You will research and write a short paper (4-5 pages) on a selected topic and submit the paper for peer review.
4. Online Workshop 3: You will present this part of your research paper.

Part IV Cloud Computing and Innovation

1. You will summarize your research done in parts I-3 and try to identify new ideas and innovations for any aspect of cloud computing.
2. You will write a full conference paper (8 -10 pages) for peer review.

3. You will submit the paper for a cloud computing-related international conference.

Learning outcomes

Completing this course should provide you with a good understanding of cloud computing and a systematic knowledge of the fundamental technologies, architecture, and security. It should provide a solid foundation for performing work related to cloud computing and for further research on topics of interest.

After successfully completing COMP 656, you should be able to



- articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing
- identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
- explain the core issues of cloud computing such as security, privacy, and interoperability.
- choose the appropriate technologies, algorithms, and approaches for the related issues.
- identify problems, and explain, analyze, and evaluate various cloud computing solutions.
- provide the appropriate cloud computing solutions and recommendations according to the applications used.
- attempt to generate new ideas and innovations in cloud computing.
- collaboratively research and write a research paper, and present the research online.
- effectively communicate course work in writing and oral presentation.

Objectives

The objective of this course is to provide graduate students of MSc Information Systems with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture and applications by introducing and researching state-of-the-art in Cloud Computing fundamental issues, technologies, applications and implementations. Another objective is to expose

the students to frontier areas of Cloud Computing and information systems, while providing sufficient foundations to enable further study and research.

Evaluation

To **receive credit**  for COMP 656, you must achieve a cumulative course grade of **B- (70 percent)**  or better. Your cumulative course grade will be based on the following assessment.

Activity	Weight
Assignment 1 (Workshop 1 paper and presentation)	20%
Assignment 2 (Workshop 2 paper and presentation)	20%
Assignment 3 (Workshop 3 paper and presentation)	20%
Assignment 4 (Final paper)	40%
Total	100%

Materials

This is a research workshop course, and there is no textbook provided. You will do your own research to find and read books, papers, and reports on cloud computing by following the course outline.

Supplemental Readings: Links to papers and articles from IEEE and other journals and proceedings through AU library, author's websites, and open domain of the Internet.

Readings

Readings are located on links to papers and articles from IEEE and other journals and proceedings available through the AU library, the author's websites, and the Internet.

Other

The remainder of the learning materials are distributed in electronic format. At this time, those materials include

- Call for Papers for three workshops.
- Keynote PowerPoint Presentations (to be provided during the course).
- Instructions for course research, workshop paper, and presentations.
- The list of web links.
- A course evaluation form.

Conferencing

The three online conference presentations using Adobe Connect are designed to give you the opportunity to present your paper and to prepare you for future research and presentation projects.

Special Note

Students registered in this course will NOT be allowed to take an extension due to the nature of the course activities.

Important links

- › [Future Course Offerings](#) 
- › [Important Dates and Deadlines](#) 
- › [MSc IS Contact Information](#) 

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 1, May 6, 2021

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